CLAIMS

1. An optical sensor, comprising a detection module, which detection module comprises an organic light emitting diode (1) and an organic detection photodiode (2, 2a) for measuring emitted light which during the use of the sensor reaches the photodiode via a sample holder.

2. An optical sensor according to claim 1, wherein the photodiode is a photovoltaic cell.

3. An optical sensor according to claim 1 or 2, wherein the sensor comprises an organic reference photodiode (2, 2b) for measuring a reference signal coming from said light emitting diode of the detection module or from a second light emitting diode.

4. An optical sensor according to claim 3, wherein the reference diode forms part of a reference module, which reference module optionally further comprises a blank holder.

5. An optical sensor according to any one of the preceding claims, wherein the organic light emitting diode, the organic detection photodiode and the sample holder are situated on or in a carrier material in one piece.

6. An optical sensor according to any one of the preceding claims, wherein the sensor is of the transmissive or of the reflective type.

7. An optical sensor according to any one of the preceding claims, wherein the light emitting diode and the photodiode in the detection module and optionally in the reference module are connected with each other through a plastic waveguide (5).

8. An optical sensor according to claim 7, wherein at least a part of the waveguide (5) has a trapezoidal shape with a top side (a), a base side (b) and two oblique sides (c), a sample holder (3) is situated at the top side (a), and the light emitting diode and the photodiode are situated on opposite sides of the sample holder (3) on the base side (b).

9. An optical sensor according to claim 8, wherein the top side (a) and the base side (b) are at least substantially parallel to each other.

10. An optical sensor according to any one of claims 8 or 9, wherein at least one of the oblique sides of the plastic waveguide is provided with a reflecting layer.

11. An optical sensor according to any one of claims 8-10, wherein the angle between the base side and at least one oblique side is 10-70°.

12. An optical sensor according to any one of the preceding claims, wherein the detection module, and – if present – the reference module, is situated on or is embedded in a plastic carrier material which is provided with an electronic circuit.

13. An optical sensor according to any one of the preceding claims, wherein the light emitting diode is a polymeric light emitting diode, preferably selected from the group consisting of diodes having in the photoactive layer as electroluminescent compound a polymer selected from the group consisting of polyarylene compounds, poly(paraphenylene vinylene) compounds, polyfluorene compounds, polyacetylene compounds, polythiophene compounds, polypyrroles, polyanilines, including derivatives of said polymers, copolymers of said polymers and said polymers provided with a dye.

14. An optical sensor according to any one of the preceding claims, wherein the detection photodiode and/or the reference photodiode is a polymeric photodiode, preferably a photodiode having in the photoactive layer a polymer selected from the group consisting of polyarylene compounds, poly(paraphenylene vinylene) compounds, polyfluorene compounds, polyacetylene compounds, polythiophene compounds, polypyrroles, polyanilines, including derivatives of said polymers, copolymers of said polymers and said polymers provided with a dye

15. An optical sensor according to any one of claims 8-14, wherein the waveguide consists at least substantially of one or more plastics selected

from the group consisting of polycarbonates (e.g. polymethylmethacrylate perspex), cyclic olefinic polymers (e.g. Zeonex®, Topas), polymethyl pentenes (e.g. TPX™), polymethylmethacrylates (PMMA), polystyrenes (PS), polyamides, polyvinyl chlorides, polyethyl terephthalates, polypropylenes, styrene butadiene styrene copolymers, cellulose polymers, polyethylenes and polynorbornenes.

16. An optical sensor according to any one of the preceding claims, wherein the sample holder contains an active layer of which an optical property, preferably the refractive index, the UV-VIS absorption, the fluorescence or the IR absorption, changes when the active layer is in contact with a component to be measured.

17. An optical sensor according to claim 16, wherein the active layer is selected from the group consisting of ion exchangers, ion-selective permeable membranes and gas-selective permeable membranes.

18. An optical sensor according to claim 16 or 17, wherein the optical property of the active layer changes as a result of the presence of a component selected from the group consisting of alcohols, in particular ethanol, carbon dioxide, ammonia, oxygen and water.

19. An optical sensor according to any one of the preceding claims, which consists at least substantially of plastic.

20. An array of optical sensors according to any one of the preceding claims.

21. A method for manufacturing an optical sensor according to any one of the preceding claims, wherein a detection module is composed from an organic light emitting diode (1), an organic detection photodiode (2), optionally a polymeric sample holder (3) and optionally a polymeric waveguide (5).

22. A method for manufacturing an optical sensor according to claim 21, wherein a reference module is composed from an organic light emitting

diode (1), an organic reference photodiode (2), optionally a waveguide (5) and optionally a polymeric blank holder (6).

23. A method according to claim 21 or 22, wherein the light emitting diode (1) and/or the photodiode (2, 2a, 2b) is manufactured by means of injection molding, printing, dip coating, vacuum deposition and/or spin coating.

24. A method according to any one of claims 21-23, wherein the diodes are manufactured on a surface of the waveguide or a surface of a carrier material for the detection module, an electronic circuit and optionally the reference module.

25. A method according to any one of claims 21-24, wherein the waveguide is manufactured by means of injection molding or extrusion.

26. A method according to any one of claims 21-25, wherein the detection module is built up integrally.

27. A method according to any one of claims 21-26, wherein the light emitting diode, the detection photodiode and the sample holder are provided on, or in, one carrier material and the carrier material is then folded.

28. A method according to any one of claims 21-27, wherein the sensor is provided with a plastic and/or metal covering layer, with the proviso that the sample holder and, if present, the blank holder, remain at least substantially free of the covering layer.

29. Use of an optical sensor according to any one of claims 1-20 for detecting a component in a liquid, preferably an aqueous medium, or a gas, preferably air.

30. Use according to claim 29, wherein the sensor serves for single-time use.

31. Use according to claim 29 or 30, for detecting a component selected from the group consisting of alcohols, in particular ethanol, carbon dioxide, ammonia, H^+ and water.